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TERMS—$2 a-year,—$1 in advance and the remainder in six months.

Veterinary.

Wash for Wounds on Cattle.—Dissolve one ounce of sulphate of zinc (white copperas) in a quart of soft water, and wash the wound with this, morning and evening. It is an excellent wash for common sores, but for virulent ulcers of long standing, the following is also an excellent and more powerful wash: Sulphate of zinc, one ounce; corrosive sublimate, one dram; and muriatic acid (spirit of salt,) 4 drams,—all dissolved in a pint of soft water and bottled for use. Apply it with a sponge morning and evening.

Oil for Wounds—Take one pint of neat's foot oil, and half an ounce of the oil of thyme; mix them together and add, by degrees, 6 drams of the oil of vitriol. These ingredients must be well stirred in a glass or stone-ware vessel until they are perfectly incorporated, then bottled up for use. This is an excellent oil for bruises in the feet of horses, and oxen.

Hoof Ointment—Take one pound each of tar and tallow, and mix them with half a pound of common turpentine in a stone-ware dish. Stir them well until they are thoroughly incorporated together. This forms an excellent dressing for the sore hoofs of horses and oxen.

How to Plant Potatoes.

A pamphlet has been published in Scotland by a farmer named Craig, on the potato disease and its cure. By planting three different kinds of potatoes together last year, very favorable results were achieved. Two out of the three varieties planted had been on previous occasions affected by the disease, all were found to be perfectly healthy and sound when dug, and experience has shown that they kept well during the winter. He believes that the potato disease may be safely attributed to the violation of one of the laws of nature, and that the generation of the malady is occasioned by the plants being too closely bred, or, in other words, by "sub-breeding."

The lesson we derive from this is, that two or more varieties of seed potatoes should be planted in each hill.

Improvement in Mariner's Compasses.

Mr. John Prime, of Washington, N. C., has suggested and patented the method of covering the boxes of all kinds of compasses with a *convex* glass, so as to shed water, and thus exclude moisure. Our engraving exhibits the improvement. Simple as the invention may seem, it is, nevertheless, an important one. The common plan is to use a flat glass placed within the lips of the compass box; this forms a shallow cup, which catches water; the glass is somewhat smaller than the diameter of the box, so as to allow for contraction and expansion occasioned by differences of temperature.

The compass is an instrument that must be always in sight; consequently, on shipboard, or in surveying, it is more or less exposed to the weather. When water falls upon the flat glass it obscures the sight of the needle, and also penetrates through the cement into the box. Here it turns into vapor and lodges on the underside of the glass, again obstructing the vision; it also defaces the card,

IMPROVEMENT IN THE MARINER'S COMPASS.

rusts the needle, and endangers its proper operation. It is alleged that the electricity induced by the conversion of the water in the box into vapor, although quite trifling in amount, is sufficient, however, to affect the magnetic properties of delicate instruments like the compass. In stormy weather, when a correct compass is most needed on shipboard, it is, as at present constructed, most likely to become deranged.

All of the objections named are obviated by Mr. Prime's improvement. As shown in our engraving the glass is convex, and placed wholly outside of the compass box, forming a complete cover. The space between the rim of the glass and the box is filled with an elastic material, which permits expansion, and always preserves a tight joint, so that water cannot beat in. Indeed, a compass thus fitted could be submerged without the least detriment. This invention is worthy the attention of all ship owners, instrument makers, and others. It is applicable to surveyor's compasses and all other kinds.

Address the inventor as above for further information. Patented in the U. S. Feb. 12, 1856. Also patented in England through the Scientific American Agency.

IMPROVED FOUNTAIN PEN.

New Fountain Pen.

In this improvement the pen handle is made hollow, and in its upper part there is a small india rubber bag, A, which contains the ink A' is a cork which is removed when the ink bag is to be filled. The lower part of the bag terminates in a tube, B, down which the fluid flows and escapes at valve C, on to a bulb or ink collector, D, thence to the under side of the pen. Valve B is opened and closed by the finger, a lever, E, and spring being provided for that purpose; the finger button, F, of the outside of the pen, connects with the valve lever, E; by pressing the button, the valve opens, and a supply of ink is thrown upon bulb D, and runs to the pen. When not wanted, the ink remains tightly enclosed, so that there can be no leakage. The end piece, G, encases and protects the pen point, so that the whole may be safely carried in the pocket. For traveling and other purposes, this contrivance is well adapted. Its construction is simple, economical for manufacture, &c. H. K. McClelland, M. D., Eldersville, Pa., is the inventor, of whom, and of G. W. Simons, maker, Ranstead Place, 4th above Chestnut street, Philadelphia, Pa., further information may be obtained. Patented April 17, 1855.

Many-Colored Bank Note Counterfeits.

The Boston Association to suppress counterfeiting, has issued a circular, in which it is stated that Mr. Serapyan's method, to prevent counterfeiting, is not safe in preventing impositions. The supposed security of this plan consisted in the printing the notes in several supposed permanent colors. It was found that some of the colors could be removed, and the denomination of the bills altered, in such a manner as to pass for genuine ones, even with pretty close scrutiny. The Association has passed a resolution condemnatory of notes so printed. This Association advertised through our columns for a method to prevent counterfeiting, but it has not met with the *right* invention yet.

The Shortest Passage across the Atlantic.

The new iron steamer *Persia* left this port on the 2nd of last month at 3 P. M., and arrived at Liverpool on the 12th, at 8h. 40m. A. M., making the actual run in 9 days, 12 hours, and 7 minutes—allowing for the difference of apparent time. She then discharged cargo loaded up and sailed from Liverpool for this port on the 19th, at 10h. 25m. A. M., and arrived at the Light Ship at 15 minutes past 9 P. M., on the 28th, and next morning came up to the dock in 1 hour 35 minutes, making the actual Western run in 9 days, 16 hours 58 minutes, adding the apparent time to the actual time of sailing. She has thus made the two voyages back and forth, right after one another in 19 days, 5 hours, 5 minutes. The fastest western passage heretofore made was by the *Baltic*, in July, 1854. The voyage from dock to dock was made in 9 days, 17 hours, and 15 minutes, which was, (if we take the time the *Persia* lay outside, into account,) the shortest western passage west yet made. The *Persia's* eastern voyage was the shortest ever made by five hours.

Copper Ore a Dangerous Cargo.

The ship *Georgia*, which recently arrived at Liverpool, Eng., from Savannah, brought some copper ore in cases, which proves to be an exceedingly dangerous cargo, for so great was the heat evolved during the passage, from the sulphur contained in the ore, that some of the cases were taken out of the ship completely charred, the lids being a mass of charcoal; while the cotton stowed immediately above them was partially burnt, and when landed from the ship, so hot as to make it painful for a man to thrust his hand into the bales. These ores should be first roasted to dispel the sulphur in them before they are shipped across the Atlantic.

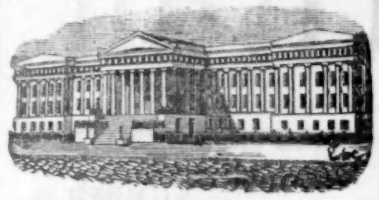
A new Hot Air Locomotive.

We have seen the statement in some of our cotemporaries, that a hot air locomotive was very recently tried on some part of the New York and Erie Railroad, and proved a complete failure; also, that it is to be converted into a steam locomotive. Is there any truth in these statements? Will some one who knows give the public the facts of the case.

Another Steam Balloon.

A. M. Tippet, in Washington, D. C., is at work on a steam balloon, and it is stated in some of the papers, that an appropriation is about to be applied for in the Senate, to enable him to construct one to carry the mails to California.

The famous brazen column of Constantinople, described by Gibbon, has been discovered in that city. It consists of the bodies of three serpents, twisted into a column of brass—from the head of one of which Mahomet II. smote an under jaw with his battle-axe.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 29, 1856.

SAWING MACHINE—Thomas J. Alexander, of Westerville, O.: I claim, firstly, giving to the revolving saw, B, a reciprocating action across or along the bed, in combination with the reciprocating movement of the bed or table, A, simultaneously in an opposite direction.

Secondly, hanging or supporting the revolving saw, B, and bed or table, A, to give them their specified compound parallel or otherwise equivalently reciprocating movement simultaneously in opposite directions on or to radial arms, c and c, arranged substantially as set forth, and geared together by toothed segments, l, or otherwise equivalently connected or driven to produce the necessary contra joint action of said radial arms, essentially as described, and whereby the proper reciprocating actions of the saw and bed relatively to each other are ensured and the movement of the one may be made to actuate the other, as specified.

CHAIN CABLE HOOKS—Enoch Applegate, of Wilmington, Del.: I claim the hinged arms, F, and projections, A, or their equivalents, for supporting the anchor, in combination with the lock lever, B, and projections, l, when operating in the manner and for the purposes substantially as set forth.

ELECTRO-MAGNETIC PRINTING TELEGRAPHS—Henry N. Baker, of Union, N. Y.: I claim the arrangement of the type wheel, the escapement wheel attached thereto, the arrangement of the crutch or detent acting upon the said escapement wheel relatively to the armature of the type wheel magnet, and the arrangement of the whole relatively to the tongue, p, by which the types are lifted up into contact with the paper in such a manner that when the circuit is closed through the type wheel magnet the tongue, p, will be opposite a space between two letters, and when, during the closing of said circuit, the circuit by which the said tongue and the feed rollers are acted upon is closed, the tongue will be inoperative and the feed rollers allowed to act without any impression being given, thereby producing a space between the printed letters or words, substantially as set forth.

PEN AND PENCIL CASE—Edward Baptis, of Hoboken, N. J.: I am aware that pen holders and pencil slides have been operated separately by spiral grooved tubes, and I therefore do not claim a single spiral grooved tube.

But I claim the two spiral grooved tube, c g, when arranged substantially as described, so that the pen holder, C, and pencil slide, K, will be shoved alternately in and out of the case and moved simultaneously in opposite directions, as set forth.

CRADLING HARVESTERS—Milton Barlow, of Lexington, Ky.: I claim constructing and operating the cutting portion of the machine, substantially in the manner described, so that by the use of the eccentric, I, or a cam or crank as a substitute therefor operating on the cradle, as set forth, when in combination with the means of delivering the cut grain by the use of a rake, operating substantially in the manner and for the purposes set forth.

EXCAVATING AND MOVING EARTH—Asa W. Cady, of Sullivan, N. Y.: I claim the plan embodied in the structure of the bridge and scraper contained in their form and method of use in the machine, and in the arrangements made operating and controlling these, with the gearing and fixtures as actuated by hand or horse power, and in adapting them to and combining them with a wheeled vehicle or wagon, so the operation of excavating earth may be performed in the manner specified.

CIGAR MACHINES—Wm. Dawson, of Huntington, Conn.: I claim the combination of the forming rollers, b b, the flexible apron, L, and the shaping dies, d d, substantially as described and for the purposes set forth.

DOOR FASTENERS—Elisha P. Moulton, of Baltimore, Md.: I claim constructing turn buttons or fasteners in the manner described. The stem and head of the button being in one piece, and having a collar at its end that prevents the button from being withdrawn from its frame by the strain wrought on the head of the button by the door which it secures; the stem of the button having a square part that is pressed against by a spring, in the manner and for the purpose described.

CORN PLANTERS—Silas C. Randall, of Rockford, Ill.: I claim the combining with the seed tube, E, a cut-off tube valve, F, for closing or opening said tube, as the case may be, said valve moving edgewise against the soil when the passage is opened to allow the grains to pass into the ground, and operated from a lever, B, substantially in the manner and for the purpose set forth.

HARVESTER CUTTERS—Benjamin T. Roney, of Philadelphia, Pa.: I am aware that vibrating knives or cutters for harvesters are well known and in common use, and that such cutters have been arranged so as to produce what is known as the shear cut.

I therefore do not desire to claim the use of vibrating cutters exclusively, but as an improvement upon the ordinary manner of arranging the same.

I claim the slotted bar, C, and cutter bar, D, as connected together by the cross pieces, e e, in combination with the cutter levers, E, their knives b, and projecting pins, i, the whole being arranged in conjunction with the fulcrum, B, substantially in the manner and for the purpose set forth.

ROTARY STEAM ENGINES—John B. Root, of Brooklyn, N. Y.: I claim the contrivance of the steam ports, passages and stop bars, arranged in connection with the piston rollers as described so as to let the steam in upon the rubber at different and opposite sides of the cylinder at as many places as the number of rollers used shall require, thus acting upon the rollers from different and opposite points, thereby relieving the center shaft from side pressure and friction and also increasing the power of the engine with the increase of the number of the steam ports and piston rollers.

I also claim the arrangement and device of the movable plates, d d, and the the stationary plates, f, and collar with the friction rollers, y', and metallic bars or arms, g, for the purpose of adjusting the piston rollers in the manner and for the purposes described.

WRENCH—Bradford Rowe, of Albany, N. Y.: I claim the solid movable jaw sliding between the parallel side pieces to which the fixed end jaw is attached, substantially as set forth.

I claim the bevel wheel and screw gearing to move the jaw, in combination with the solid movable jaw, substantially as set forth.

SHINGLE MACHINE—John B. Evins, of Greencastle, Ind.: I do not claim the reciprocating knife and panel, for they have been previously used for the same purpose.

But I claim, first, the combination of the knife frame, C, and panel frame, D, when constructed, arranged and operating conjointly, as shown and described.

Second, I claim operating the knife and panel frames, C D, by means of the lever, J, when connected to the two levers, K K', as shown, so that two movable fulcrums are obtained, the pitman being attached to the lever between the fulcrums, for the purpose specified.

HAND SEED PLANTERS—Edward Hopkins, of Cincinnati, Ohio.: I claim the arrangement of the rod, and spring, 7, combined with the catch block, 11, and sliding plate, 12, for operating the semi-circular cylinder, 3, and lid, 9, for purposes substantially set forth.

ATTACHING HARVESTER CUTTER BLADES TO THE SICKLE BAR—W. H. Hovey, of Springfield, Mass.: I claim attaching the teeth, B, to the sickle bar, A, by means of the grooved pins, a, and bar, C, attached to the bar, A, and the plate, D, having holes, d, and slots, e, made through it, substantially as shown and described.

SCAFFOLDING—John M. Dearborn, of Boston, Mass.: I claim the improvement in the construction of movable scaffolds, which consists, first, in constructing the upright standards of two planks or boards leaving a space between them in which spaces the ledgers can be moved up or down and secured in any desired position, as described.

I also claim constructing the upright standards with tenons on the top which fit into the bottom space strengthened by an iron sleeve between the planks of the upright standards of the next upper section, whereby I am enabled to extend the staging vertically, as described.

JOINT BODIED BUGGIES—Edwin J. Green and Moses H. Wheeler, of Cedarville, N. Y.: We claim supporting the front or seat section of a joint body carriage on a spring reach by means of a bolt or equivalent support, whereby we avoid the use of a spring as heretofore used under the seat, but still have the advantages of said spring by using the spring reach as such, substantially as set forth.

AUTOMATIC RAKE FOR HARVESTERS—Salem T. Lamb, of New Washington, Ind.: I claim giving the rake its circular motion by means of the traversing and rocking cam, J, in connection with the revolving cam, E, which gives the longitudinal motion through the intervention of devices substantially as described.

DRY GAS METERS—Wm. Lyon and Chas. W. Dickinson, of Newark, N. J.: We claim, first, so constructing the metallic bellows described for the measurement of gas that the spring or bend of the metal may form chambers of varying dimensions of definite capacities, as set forth, for receiving and measuring the gas, the whole arranged as specified or in any equivalent manner.

Second, we claim giving motion to the registering wheel, A', by the impinging lever, Q, operated by the wheel, F, and the levers and connections communicating with the bellows, substantially as described.

CORN SHELLERS—Ebenezer Mathers, of Morgantown, Va.: I claim the construction of the shafts, B, with channels, k k, said channels being furnished with elastic tongues, D D, for the purpose specified.

PRINTING WOOLEN AND OTHER FABRICS—John McInnes, of Braintree, Mass.: I claim the general construction and arrangement of the machine, that is to say, the vertical cylinder, B, with its series of blocks, A, in combination with a corresponding series of sieves, or their equivalents, arranged and operating in the manner substantially as set forth.

BREECH LOADING FIRE ARMS—S. F. Stanton, of Manchester, N. H.: I claim, first, raising the chambers into line with the barrel, by the action of revolving them, in the manner substantially as set forth.

Second, the peculiar form of the breech piece with its elevated and depressed portions, D D', and inclined planes, a a', whereby as one charge chamber is raised into line with the barrel, the one last discharged is forced down by the inclined plane, a', into its vertical position, as set forth.

Third, the method described, of securing the chambers in position without interrupting their motions by means of the lever, operating substantially as set forth.

Fourth, I claim the ring, t, constructed and operating as set forth, for the purpose of arresting the motion of the revolving chambers, and closing the joint between the barrel and the chamber, as described.

Fifth, I claim the combination of devices or their equivalents, whereby the ring, I, is driven forward to release the charge chambers, before they are revolved, as set forth.

Sixth I claim the safety stop, operating in the manner substantially as described, for the purpose of preventing the fall of the hammer, whenever the ring, I, is not drawn over the joint between the barrel and the charge chambers.

REAPING MACHINES—Pliny Thayer, of Lansingburg, N. Y.: I claim, in combination with the raker's stand and the usual platform for receiving the cut grain, the rearward inclination and extension of said platform from the line, a, so that the raker may move his rake with the natural sweep of his arms or body, in raking the gravel from the platform, as set forth, and deliver it clear of the gearing.

FRICTION MATCHES—Alex. Underwood, of German Flats, N. Y.: First, I claim the cutting and rocking device, T T T, formed of the several parts or elements, b c c d e e f f g g h, as described and fully shown.

Second, I claim the manner or mode of feeding the blocks or billets, of wood, to the cutters by the alternate lateral shifting motion, the box, f f, caused through the intervention of the devices, b j j q r q 2 r u v w y y, combined with the fluted rollers, &c., substantially as described and as shown.

Third, I also claim the toothed or geared reciprocating crank device, A, with the combination parts, e e, and f2, k m n, and the dipping pan, g c, substantially as set forth and represented.

Fourth, I claim the construction of the endless chain rack devices formed with series of pins or teeth, as at E, together, in combination with the intermittent rotary rack carrier, D, and crank ratchet device, G H, used and operated substantially as described.

Fifth, I claim the boxing and capping device, K K L M N O O P R W, 2, 2, 4, 4, 9, 9, as described and shown.

BOX OPENERS—C. P. S. Wardwell, of Lake Village, N. H.: I claim the employment of rotary dogs, C C, or their equivalents, substantially in the manner and for the purpose set forth.

I also claim the combined arrangement of the spring, G, and flattened shanks, F F, of the dogs, when, by the wedge lips of the dogs are kept in the same line, or parcel, with each other for convenience of insertion without hindering the desired rotary motion of the dogs.

FIRE ARMS—Frederick Newbury, of Albany, N. Y.: I do not claim a movable block for load chamber, nor tube magazines.

But I claim, substantially as set forth, first, the method of operating the block, D, by the hammer, in combination with the forked lever, G, the spring, E, and recoil stop pin, p, reference being had to the peculiar form of the lever, G.

Second, the formation of the front trigger guard into a sear spring, and its attachment to the lower end of the trigger.

I disclaim as not new, the other parts of the apparatus described.

PARING APPLES—E. L. Pratt, of Philadelphia, Pa.: I claim attaching the lower end of the knife shaft, I, to the stud projecting from the large segment, L, by a flat steel or other spring, S, for enabling the said knife shaft to have a slight vibration, through the twisting or torsion of said spring, for the purpose of adapting the edge of the knife to the inequalities of the surface of the apple during the process of paring, and enabling the elasticity of the spring, S, produced by the twisting or torsion of the same to be exerted toward bringing the edge of the knife when thus moved, back to its proper relation to the surface of the apples, as set forth.

SELF-RAKERS FOR HARVESTERS—T. T. Whitaker, of St. Charles, Ill.: I claim, first, the rock shaft, E, in combination with the rack, F, and connecting shaft, J, operating in the manner and for the purposes substantially as set forth.

Second I claim, in combination with the rack, F, the cradle, L, when operating in the manner and for the purposes set forth.

Third, I claim the method of adjusting the rake, F, so as to enable it to rake from platforms of different widths of cut, substantially as described.

CORN PLANTERS—Samuel Witt and G. W. Albaugh, of Green Castle, Pa.: We claim the use of the slide, E, in corn planters, operated as described, when provided with expanding grain receptacles, g g, constructed as described, and when the divisions, o o, of the hopper are provided with strikers, P, all operating substantially as set forth, for the purpose of preventing the choking from wedging of seed, and insuring its delivery to the drill tube.

PROPELLING BOATS—S. W. Wood, of Washington, D. C.: I claim the arrangement and combination of the horse power and paddle wheels described, whereby the raising and lowering of the paddle wheels, to suit the various depths at which the boat sinks, and produces a variable inclination of the horse power, so as to enable the horse to exert a power proportioned to the weight of the load.

CLEANING KNIVES—A. C. Ketchum, (assignor to E. B. Olcott,) of New York City: I claim subjecting the knife blades while secured upon the bed piece to the requisite friction or rubbing, by means of the strips, e, attached to the under side of the board, E, substantially as shown and described.

LATHE—A. H. Brown (assignor to Tingley and Veile,) of Albany, N. Y.: I claim the form and arrangement of the cutter stocks with the cutting tools attached, so as to partake of the curvilinear motion of the stock, and pivoting them upon the slide rest, in combination with the apparatus for transferring the lines of the pattern by the motion of the stocks to the cutters, so as to produce a turned surface, of which the edge of the pattern is a sectional representation, substantially as set forth.

EMBOSSING AND PRINTING—S. W. Lowe, of Philadelphia, Pa. (assignor to J. M. Beck, of Harrisburgh, Pa.): I do not desire to claim, exclusively the employment of the segmental or D-shaped rollers, for printing and embossing, or the use of such rollers in combination with a traversing frame.

Neither do I claim the movable apparatus described.

But I claim, first, the employment of two segmental rollers, in combination with a traversing frame or table, said table having a loose plate, by removing and replacing which the said segmental rollers may be used for embossing for printing from the engraved plates, for which a patent was granted to me on the 18th Sept., 1855, for printing from common type, in the manner set forth.

Second, the radial adjustable arm, d, in combination with the lower segmental roller, K, for the purpose of limiting the distribution of the ink, to the engraved plates attached to said rolls.

HARVESTER FINGERS—John Reily, of Heart Praire, Wis.: I claim hardening that part of the tooth on which the knife works, for the purposes substantially as set forth.

DESIGNS.

CLOCK CASE FRONTS—Nicholas Muller, of New York City: I claim the wreath and figures, arranged as set forth.

CLOCK CASE FRONTS—Nicholas Muller, of New York City: I claim the female figure, D, reclining or sitting upon the sheaves, C, as shown.

The Boston Watch Company.

The press is proverbial for knowing every thing, and prying into every secret, and we intend to keep up the credit of our profession, if we can, by giving to our readers all the information that we think will interest them, concerning the internal economy of those manufacturing establishments on which the prosperity of our town so largely depends. These establishments must, of course, be closed against the general visitor, to prevent interruption of the work, but "the press" has access everywhere, and is treated with courtesy everywhere, except where we are afraid of exposure.

Travelers on the Fitchburg Railroad will have noticed on the south bank of Charles river, half a mile above the Waltham station, a plain but handsome structure in the form of a hollow square, covered with stucco. It is the only watch manufactory on this side of the Atlantic; indeed, we may say it is the only manufactory of its kind in the world, for the processes of the manufacture of these watches are different from those employed in England or the continent; the work is here all done in the building, which is not the case elsewhere.

Messrs. Dennison, Howard & Davis have been five or six years in establishing themselves and their business; first in Roxbury, and then in their present less dusty and more quiet situation; and in that brief time have succeeded in perfecting machinery and educating workmen to such a degree as to make daily ten or a dozen elegant and excellent watches, worth, in silver cases, from thirty to fifty dollars each—in gold cases, double that sum. They employ about seventy-five hands, mostly young men and young women, but their strongest hand is a steam-engine, nominally 12-horse power. Each of these seventy-five pairs of hands has its own work to do, and by being exercised upon one thing for several years have acquired a skill which would seem miraculous to the novice. The building is divided into many small apartments, and at the time of our visit, in each apartment some different part of the watch was in hand. The whole force of the establishment is now turned upon the manufacture of thirty hour watches in hunter's cases; but we saw a beautiful specimen of an eight day watch which had been manufactured there.

In the first apartment which we entered the principal brass plates in the watch were prepared for receiving the works. The accuracy with which these plates were made was proved to us by taking a set of them at random and putting them together; they fitted with perfect accuracy, as though the members of that particular set had been made specially for each other; yet each piece would fit equally well in any other set. In other rooms we saw the cases going through their various processes. The metal was rolled into plates, cut into shapes, stamped into concave form, rough polished, pickled in acid, the parts soldered together, and newly polished with finer material, the whole put together, and then subjected to successive polishings until an exquisite luster was obtained. We also saw the marvellous little machine by which the back of the case is adorned with its singular engraving, wherein the lines that are seen were not engraved, and the lines that were engraved are not seen except by the initiated. A series of concentric waiving circles appear, for example, like a series of interesting curves, radiating from a center.

But with watches as with men, the externals are of little importance compared with the internals. We went, therefore, to another part of the building to see the operation of manufacturing the digestive apparatus, by which the daily food of muscular power communicated through the watch-key, is elaborated into available form, by which the will, in shape of a main spring, under the guidance of judgment in shape of an escapement, may move the hands to useful purpose. Here we saw the singularly ribbed pinions cut into proper lengths, turned to proper diameters in their various parts, the leaves re-cut and polished, and the whole pinion pass through successive polishings until the microscope could detect no lack of luster. In another part of the room brass wheels were stamped out without teeth, the teeth cut by an engine, the wheel with its teeth carefully polished, and then, by a neat and effective machine the wheel and pinion united forever.

The hands—made of silver or gold—are formed by a series of dies and punches which leaves nothing to be done by other hands but the mere polishing. The little screws used in fastening the parts together were made by beautiful and delicate machines, the perfection of human ingenuity and skill.

After a glance at the springs, and the mode in which they are braced to prevent breaking while the watch is in use, we went through the engraving room, where the brass plates of the watch are ornamented by the gravers' tool. Thence we passed to the jewelers' room, where garnets, chrysolites, aquamarines, and sapphires are the materials, and diamonds the tools. Stepping a little further we were shown the watches, without cases, and the brass plates not yet gilt, but real watches, going and keeping time. It gave us a strange feeling of awe, as though we had witnessed the building of a body and the breathing in of life. Further on we saw watches with all the plates splendidly gilt, but not yet clothed with a case. Finally we were shown the watch dressed in silver and gold, and ready to start on its mission in the world.

And no unimportant mission is that of the watch; teacher of punctuality, monitor to diligence, prophet of eternity, consoler of the weary and sleepless, companion of the lonely traveler, guide to science, substitute for the sun and stars of heaven when their light is obscured. Who can picture to himself the loss to the world if modern time-keepers were struck out of existence? Only one benefit would arise to counterbalance the many losses. The invention of clocks and watches by relieving the mass of men from the necessity of observing the sun and stars has withdrawn too much of their attention from the sublime and instructive phenomena of the heavens.

Our visit to this establishment was too pleasant to be left unrecorded, and we have thus endeavored to give to our readers some small part of the pleasure which the polite attention of the foreman, Mr. Stratton, gave us. —[Waltham Sentinel.

An American Carpenter the Founder of an Aristocracy.

In 1687 I. Phipps, a carpenter of Boston, and the son of a blacksmith, devised an improvement in diving apparatus for submarine explorations, and operated with it on the wreck of a Spanish galleon lying off the coast of Hispaniola; and having been assisted with money by the Earl of Albemarle, succeeded in raising property to the value of more than a million of dollars, and his own share amounted to $100,000. He afterwards continued to engage in similar adventures and was very successful; was knighted, and became the founder of the family represented in England by the Marquis of Normanby. His coat-of-arms should justly consist of a saw, jack-plane, and diving bell.

A steam hammer has been constructed in Glasgow by a Mr. Condie, which weighs 30 tuns. Its whole hight is 23 feet, and it has a stroke of 6 feet.

(For the Scientific American.)

Explosion on the Steamboat Metropolis.

In a late number of the SCIENTIFIC AMERICAN, on page 245, we noticed some remarks in reference to the explosion of the *Metropolis*, which occurred on the 27th March last, at at West Columbia, on the Ohio River,—which are incorrect, but for which we do not suppose you are to blame, as misrepresentations have been made to you.

You say, "This accident has been attributable to a defect in the metal of the boiler, which is stated to have been tested by the hydrostatic pump, and to have withstood 216 lbs. pressure before she started on her last trip from Pittsburg to New Orleans. It is also stated that the steam in the gauge, when the explosion took place, exhibited only 110 lbs. pressure, and two sheets only in the center of the boiler was all that was torn away. There was no deficiency of water in the boiler, and no evidence of any sudden great increase of steam at the time of the accident."

The *Metropolis* was a new boat, on her first trip, she had been inspected at Pittsburg, and her boilers were tested up to 210 lbs. pressure, and the limit of her working pressure was 133 lbs., as the boilers are 38 inches in diameter, and 14-48ths of an inch in thickness. The next day after the explosion the boat was towed to this place, when we immediately repaired on board, and made a thorough examination and investigation as to the causes of the explosion. She had three boilers, and it was the starboard one that exploded. The place that first gave way was on the 4th rim from the forward end, about 12 inches from the bottom of the boiler, and on the starboard side. The 4th, 3rd, and part of the 2nd rims from the forward end were entirely torn loose from the other part of the boiler, and spread out nearly to a plane surface. There was not a particle of defect about the iron, and no doubt it was of the best quality when manufactured. At the point that gave way, the iron, under the influence of heat and pressure, was bagged down and pressed out to an eighth of an inch in thickness, which was less than one half of its original thickness. From the marks left inside of the boilers, it was quite evident that there was not more than five inches in depth of water in the boiler at the time of the explosion, which was therefore produced in consequence of the scarcity of water, and which would not have occurred with proper management. We therefore revoked the licence of the engineer who was on watch at the time.

It is true that the explosion occurred with about 110 lbs. by the steam gauge, notwithstanding the boilers a few days previous had been subjected to a pressure of 210 lbs. at Pittsburg; but this can be very easily accounted for in the following manner: At the time of the explosion, the tenacity of the iron was so much destroyed, by over-heating, that 110 lbs. pressure was sufficient to separate the particles of iron. No doubt the same boiler, with a proper supply of water would have sustained a pressure of more than 300 lbs. to the square inch, Yours truly,

T. J. HALDIMAN,
W. W. GUTHRIE,
Local Inspectors.

Cincinnati, April 18, 1856.

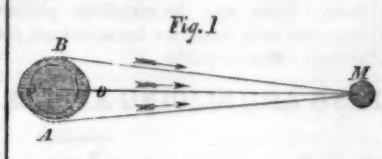
[For the Scientific American.]

The Tides.

The tides are the alternate rising and falling of the waters of the ocean at regular intervals. The rising of the water is called "flood tide," and when the water has attained its greatest elevation it is called "high tide," or "high water." The falling of the water is called "ebb tide," and when at the lowest point, it is then said to be "low tide," or "low water." The interval of time between any two successive high or low tides, at any place, is about 12h. 25m. The water rises for six hours, and then begins to fall, and falls for six hours more; it then begins to rise again, and so on continually. The tides pass round the earth from east to west, with the apparent daily revolution of the moon. Hence it is seen, that when there is high tide at any place, there must be a high tide on the opposite side of the earth; and the same is true in respect to a low tide.

The cause of the tides is the unequal attraction exerted by the sun and moon upon different parts of the globe. We will begin explaining this phenomenon, commencing with the moon.

Fig. 1



Let M, in the figure, represent the moon; E the solid portion of the earth, and A O B and A O′ B the ocean. Under the influence of the attraction of gravitation, alone, the waters on the different parts of the globe would be of the same specific gravity, and would remain of the same hight, as shown by the dotted lines in the figure. But on the side of the earth, towards the moon, the attraction of the earth is in part counterbalanced by the attraction of the moon, and the water is thereby made *lighter* at O; while at A and B, the moon's attraction acting nearly at right angles to the earth's attraction, the weight of the water at these two points is not diminished, but rather increased; the equilibrium of the waters is thus destroyed, and those at A and B *displace* those at O, causing them to become *higher*, while those at A and B *sink lower*, until the equilibrium is restored. We have explained the cause of the high tide on the side of the earth towards the moon, and will now proceed to explain the causes of the high tide on the side of the earth opposite the moon. This is also owing to the lunar attraction. Every particle of matter belonging to the earth is attracted by the moon with a force which varies inversely with the square of the distance of the particle from the center of the moon. Consequently the waters at O′ are less attracted by the moon than any other part of the globe. As the moon's attraction at O′ is directed towards the earth's center, a deficiency of lunar attraction at O′, necessarily diminishes the gravity of the water at O. To make this plainer, suppose a cubic foot of water at O′ to weigh 62 pounds, i. e., to be attracted by the earth with a force of 62 pounds. The cubic foot of water also attracts the earth with a force of 62 pounds. Now the water at O′ is attracted by the moon 1-31 less than the mass of the earth. The tendency, then, of the moon's attraction, is to separate the earth from the water at O; in other words, to make the water at O′ lighter. According to the above, the weight of the cubic foot of water would be diminished 1-31 of the moon's attraction upon the earth. The waters at O′ having had their specific gravity diminished, they are pressed upwards by the water at A and B, until equilibrium is restored. This produces high tides at O and O′, and low tides at A and B, all at the same time.

The sun also, as has been said, exerts an influence in producing tides. This influence, which acts in the same manner as that of the moon, is about two-fifths less than the lunar influence. We see, then, that the sun and moon produce tides in the ocean, independently of each other. These bodies, however, are continually changing their relative positions in the heavens, and on this account their separate actions are at alternate periods of time united and opposed to each other. The sun and moon act together when the moon is at the syzygies, or at new and full moon, and their separate influences are then united, producing a tide wave equal to the sum of their separate actions. These are called "spring tides." Twice every month, when the moon is at her first and third quarters, the sun and moon oppose each other in their action, and the effect is to raise a tide equal to the difference of their separate influences. These are called "neap tides." Spring tides are the highest flood and ebb tides, and neap tides, the lowest flood and ebb tides. The hight of the lunar tide wave being about five feet and the solar two, the average hights of the spring and neap tides will be in the ratio of 7 to 3.

As we have said, there exists a marked correspondence between the motions of the tides, and those of the moon. And, if the waters moved with perfect freedom, the lunar tide wave would be the highest at any place when the moon was on the meridian of the place But the waters, on account of their inertia, do not immediately obey the impulse given them, under the solar and lunar influences. It thus happens that it is not high water at any place till several hours after the moon has passed the meridian. Not only does the tide lag behind the moon, but inasmuch as the moon rises 50 minutes later every night, as she advances eastward in her orbit, high or low water is about 50 minutes later, in reaching any particular meridian, than on the day precedin

The tides are not always of the same uniform hight at any place, but, in consequence of the moon and sun continually changing their relative positions, greatly vary. One of these causes has been explained in treating of the spring and neap tides. Another cause is found in the declination of the moon and sun. Were the sun and moon always to remain in the plane of the equator, the tides would be continually highest at the equator and lowest towards the polar regions, inasmuch as the highest point of the tide wave tends to place itself directly beneath the body which raises it. But these two bodies are not thus situated, since, owing to the obliquity of the ecliptic, they have an apparent motion north and south of the equator; the sun departing from the equator each way 23 1-2 degrees; while the moon reaches on one side a declination of about 29 degs., and on the other side of about 17 degs. These changes accordingly affect the hight of the tide at any particular place. When the moon has attained her greatest northern declination, the daily high tides will be highest at all those places in the northern hemisphere, where the moon is above the horizon and lowest where she is below the horizon. When the moon has reached her greatest southern declination, the reverse is the case. The tides also vary in hight, according to the distances of the earth and moon at the time when they occur. Take, for example, the spring tides at New Moon. If the earth is at her aphelion distance from the sun, and the moon in apogee, the attraction of both the sun and moon will be less than their average amount, so that there will be but a moderate spring tide; but if the moon is in perigee, and the earth at her perihelion distance, both the sun and moon being at their nearest points to the earth, and in conjunction, will exert their full attractive influence upon the earth; and the spring tide will be unusually high.

The theoretical hight of the tide waves, under the lunar action, is 58 inches, and under the solar action 23 inches. The actual hight of the tide wave is, however, exceedingly various in different parts of the world, owing in some instances, to its being crowded into narrow channels, the union of two tide waves, and to various other local causes. The hight of tides on different portions of the Western hemisphere has been given as follows:—

Bay of Fundy,	60 to 70 feet.
Passamaquoddy River	25 feet.
Boston,	11 feet.
New York,	5 feet.
Cape May,	6 feet.
Cape Henry,	4 1-2 feet.

In the Pacific Ocean it is about two feet; and in some places in the West Indies, it is scarcely fifteen inches. In inland seas and lakes, there are no tides, because the moon's attraction is equal over their whole extent of surface. ALBERT WALDRON.

Breakabeen. N. Y.

To Make Pure Wine of Apples.

Being aware that much wine sold for genuine champaigne was manufactured from cider, we informed a correspondent a short time since of this fact in answer to his inquiry. The following letter was elicited by the reading of the answer referred to:—

MESSRS EDITORS—I am well aware that imitation wines are now extensively made in the State of New Jersey from the juice of the apple, and more from the Harrison apple than from any other variety, and the most of it is made at Newark. Those *knowing* ones are correct with regard to its being a mixture of poisonous drugs not fit for the human stomach.

Having been in the horticultural business for over forty years I have had an eye single to those spurious wines from the juice of the apple.

It is gratifying to me to think that when you come to taste and test my wine—which I send you accompanying this letter—you will find a wine, a pure article, free from all drugs, and not an imitation. The sample I send you is eighteen months old, and made after the following process:

Take pure cider made from sound ripe apples as it runs from the press. Put 60 pounds of common brown sugar into 15 gallons of the cider and let it dissolve, then put the mixture into a clean barrel, and fill the barrel up to within two gallons of being full with clean cider; put the cask in a cool place, leaving the bung out for 48 hours; then put in the bung, with a small vent, until fermentation wholly ceases, and bung up tight, and in one year the wine will be fit for use. This wine requires no racking, the longer it stands upon the lees the better. STERNE BRONSON.

Elkhart, Ind., April, 1856.

[It will be observed that our correspondent has, for the benefit of all concerned, described the method of making pure cider wine, and it is for us to say something regarding the sample he sent us. It is a good cider wine, the best we ever tasted. If it had any fault, it consisted in being a very little too sweet. This can be remedied by using less sugar than the above named amount. A barrel of cider contains 31 gallons. Wine from currants can be made in the same manner exactly.

Great Iron Works—The Largest Water Wheel in the World.

The *Northern Budget* (Troy, N. Y.,) states that the largest water wheel in the world is that of H. Burden, at the Albany Nail Works, on Wyanskill Creek, near Troy. The fall is 75 feet, and the power of the wheel equal to 1000 horses. It drives machinery which works up annually 10,000 tuns of iron into horseshoes, spikes, nails, rivets, &c., in the different buildings into which the power is distributed, viz., iron foundry, horseshoe factory, rolling mill and puddling forge, cut-nail factory, machine shop, cooper shop, &c., leaving a power equal to that of 400 horses to be applied for additional purposes. 15,000 tuns of coal are used annually, and 3,000,000 tuns of ore. The business amounts to from $950,000 to $1,000,000 a year. The wheel is an overshot, built on what is called the "suspension principle." It is a noble piece of millwrighting, and does credit to those who put it up.

On the same stream are the Iron Works of Corning, Winslow & Co., which has a fall of 75 feet distributed between three dams. A portion of the works—viz., a rolling mill and puddling forge—are worked by steam, while another rolling mill, a wagon, carriage, and car-axle factory, and spike and nail factory are run by water. This establishment employs on an average 500 hands, works up annually about 11,000 tuns of iron, and uses from 16,000 to 17,000 tuns of coal; also 1500 tuns of ore brought down from Port Henry on Lake Champlain. It does a business of a million a year, and pays out probably $180,000 a year for labor performed on the premises—or nearly $3500 a week.

Ships of the Desert.

A number of camels are daily expected from Arabia, and the effort of naturalizing them will be first attempted in Texas. We hope the experiment will be a successful one. We require such "ships of the desert" for traveling over the plains on the east side of the Rocky Mountains.

The great suspension bridge across the Mississippi at Rock Island, it is said, occasions a detention of steamboats, and has become an object of dislike to the steamboat companies.

Young cotton has been injured in some parts of Georgia, by late frosts.

A new line of French steamers have commenced running between this port and Havre. The first steamer of the line, named the *Alma*, arrived here last week.

The sum of $175,000 has been subscribed at Covington, Ky., to build a bridge over the Ohio river.

New Inventions.

Progress of Telegraphing.

Marshall Lefferts recently delivered a lecture before the Geographical Society, in this city, which contained many interesting items, but as reported in some of our daily papers, it contained many incorrect statements; these we ignore in an abstract of it.

The lecturer traced its first discovery and progress of the uses of electricity for telegraphing, remarking that Arthur Young, in his travels in France, in 1764, found a man who had arrived at the power of communicating across a room by means of an electric battery, and forming an alphabet from it. Up to 1798 the knowledge was confined to the electricity of friction. Since that date that of chemical electricity has been known; but it was only when Prof. Henry, of the Smithsonian Institute, made the great finishing discovery of magnetic electricity, that its ultimate usefulness was assured.

"The first line of actual telegraph was established by Morse and others in 1844. In Europe there are more than 37,000 miles of wire, divided as follows:—England, 9,200; Germany and Prussia, 5,000; France, 4,500; Austria, 3,500; Turkey, 1,200; Prussia, 2,800; India, 500; Spain, 450; Denmark and Sweden, 800; Italy, 1,900; Switzerland, 1,000; Holland and Belgium, 1,000.

We have in this country about 35,000 miles, and it is worthy of remark that while the lines of Continental Europe are mostly run between great cities and military posts, ours extend over all the country."

The lecturer gave illustrations of what had been already done, in the way of binding together the world by this chain of wire, extending from London to Sebastopol, and soon to be extended to Africa and across Asia.

"But the great link yet wanting is the sub marine line between this country and Europe. He commented upon the supposed advantages of the two routes; that from Cape Race to Cape Clear had been surveyed by Maury and declared practicable. The ground was very level, and there existed no difficulty in the way of laying the cable. All that could be apprehended was possible want of strength in the cable for so great a distance, and the fear which some entertained that an instrument could not be worked upon so long a circuit. The northern route by Greenland, had the disadvantage of deeper water to lay in."

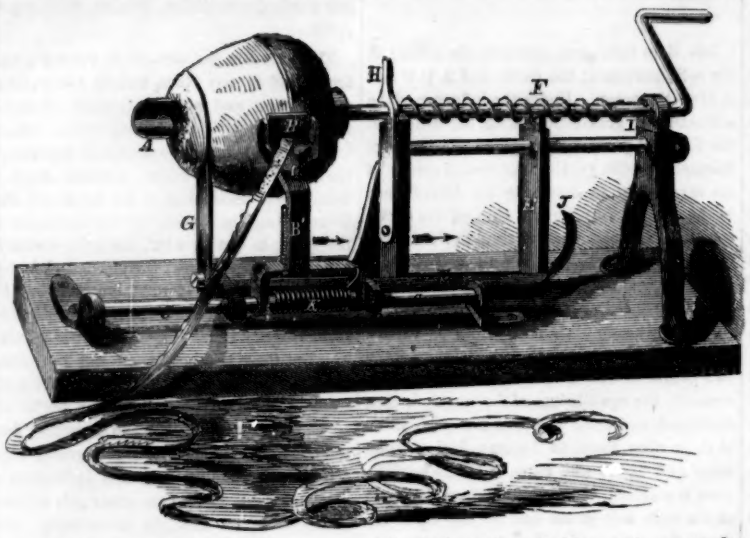
The lecturer did not apprehend any difficulty in the way of working upon so long a circuit. He had himself worked 1 000 miles, and in Europe the feat had been accomplished of working 1,800.

We have always understood that Cooke & Wheatstone's telegraph was set in operation in England, in 1840. When Dr. Lardner delivered his course of scientific lectures in 1841, in this city, he described the English telegraph as being in operation, and that he was an eye-witness to its success and usefulness on the Great Western Railroad. Many who heard those lectures will remember this. We believe, from evidence, that Cooke and Wheatstone established the first working line of telegraph, but their invention is undoubtedly inferior to the Morse Telegraph.

Curious Coincidence Relating to two Inventions.

The last number of the SCIENTIFIC AMERICAN contained the claim of a patent granted at Washington to Thomas Smith, of Pittsburg, Pa., for a bullet having a spiral cavity within it to give it a spinning motion on its long axis when passing through the air, and when fired from a smooth bore fire-arm. A bullet molded on the same principle and designed to accomplish the same object was described on page 245, Vol. X, SCIENTIFIC AMERICAN, as the invention of J. W. Cochrane, formerly of this city, but at present on a visit to Europe. This is rather a singular circumstance, and another no less so relates to Lieut. Rodman's method of casting cannon and cooling them, described on page 261, this Vol., SCIENTIFIC AMERICAN, being also described in a late number of the London *Mechanics Magazine*. It is therein stated that Mr. Cochrane has introduced into that country an improvement in casting guns and mortars, calling him the inventor, and describing Lieut. Rodman's plan of casting with a tubular core, and then cooling the gun by forcing a current of water through the tube. It appears to us, from the information we have had of these two inventions, that while Mr. Cochrane is the first inventor of the hollow spiral bullet, Lieut. Rodman is the inventor of the tubular core for the casting of cannon, and the cooling of them by continuous currents of cold water forced through them. There may be something *peculiar* connected with these two inventions not yet brought before the public.

MACHINE FOR PARING, CORING AND SLICING APPLES.



Apple Parer, Corer, and Slicer.

The apple is placed upon a gouge shaped holder, A, and revolved by means of the crank. The paring knife, B, is mounted on a standard, B′, which slides on rod C. Standard B′ is connected by means of brackets, D, with slide, E, the upright of which, E′, is forked, so as to mesh with the wire screw thread, F. G is the slicing knife standing upright, and attached to one end of E.

By the rotation of the crank, screw F operates on upright E′, and causes it, with slide, E to move in direction of arrow, carrying along the standard, B′, and slicing knife, G. The paring knife, B, is thus made to pass across the surface of the apple while the latter rotates; the slicing knife, G, also cuts into and slices the apple, with a spiral cut, just as fast as it is pared.

The coring is done by holding the apple with one hand while the gouge, A, is revolved backwards. One edge of the gouge is made sharp for this purpose. The apple having been removed, the catch, H, is now thrown back, in order to permit the crank shaft to rise backwards on its hinge at I, so as to clear the screw, F, from the fork at the top of E; the force of spring J is now sufficient to push E′ and its appurtenances—slide, E, standard, B, &c.—back to their starting point, ready for another apple. These operations are all done in less time than is required to write a line of this print.

The machine is quite simple, economical to manufacture, and operates with much precision. The spiral cut produced by the knife, G, leaves the apple sliced through the center and yet it does not fall apart; a string may be run through their centers or the apples may be placed on shelves, for drying, without further trouble. The neat and perfect manner in which this little machine does the work seems to render it a general favorite. We are told that a child with one of these contrivances can pare, core, and slice from 2 to 4 bushels of apples per hour. Knife G turns down out of the way when slicing is not wanted.

Mr. Charles P. Carter, of Ware, Mass., is the inventor, of whom further information can be had. Application has been made for a patent.

IMPROVEMENT IN WRIST-BANDS.

Patent Wrist-Band.

This improvement concerns gentlemen and ladies—gentlemen particularly, who value neatness in their personal appearance. It consists in attaching to the shirt an extra wristband, to be held in reserve; so that when one cuff becomes dirty it may be tucked under out of sight, while the other, clean and unsoiled, is turned down, for use.

In our engraving A and B are the two cuffs. When A becomes soiled, the wearer unbuttons the band, and folds it under out of sight, and turns B down in place of A. When turned back, in reserve, as in the cut, it will be seen that the surface of B is always protected and kept clean, ready for use. For a sudden emergency this contrivance is "just the thing." It is alleged that its use avoids so frequent washing, and thus saves wear and tear of the whole shirt—a clean wrist-band may be thus kept in reserve, preserving for a longer time a general neatness, the wrist-band being that part of the shirt most exposed and soonest soiled. In short, the patentee says, "it may be termed a self-saving, self-cleaning, anti-washing wrist-band."

The inventor is Dr. R. K. Chandler, of Richmond, Va., but for the present at the Astor House, New York, where further information can be had. Patented May 22, 1855.

Coke on Railroads.

We have often advocated the use of coke on our railroads as a substitute for wood, and we are happy to perceive that periodicals—exclusively devoted to railroad interests—have come up to our aid, arguing for its adoption even though it may be more expensive than wood. They plead for it because of its greater cleanliness, arguing justly, that the absence of smoke and sparks from railroads would induce many to travel by the rail who now choose the steamboat.

On the Hudson River Railroad recently, experiments were made to test two kinds of coke as fuel—American and English—to ascertain if it would be expedient to buy a quantity of English coke, which was offered at a low price. The experiments were made with a common wood-burning locomotive. The English coke burned freely, and made steam well, but soon melted the grate bars and clinkered. The American coke burned freely, and did not clinker nor injure the grate. The amount of water evaporated per pound, as compared with wood, was not ascertained; but this was not required for the amount of water which a pound of good coke can evaporate, under favorable circumstances, is well known. As coke is the only fuel that is used on all the English locomotives, its successful application (if its cost will allow of it) on American railroads need not be questioned. It is for our railroad managers to consider well its relative economy as compared with wood, which must soon be abandoned, we think, on our Eastern railroads. If anthracite coal will answer as well as coke, of course we think its use is preferable, because it is cheaper, and is just as cleanly, emitting no smoke nor sparks.

New Stone for Pavements.

A coarse-grained, whitish stone, has been proposed as a substitute for our granite pavements, by Messrs. Bell & McEntee, of Kingston, Ulster Co., this State. The merits claimed for it are, it does not wear smooth, therefore if it were used for city pavements, it would always keep rough, and horses would not be liable to slip and fall upon it as they do on the smooth worn granite pavement.

We have received a sample of this stone, in order that we may form and express some opinion regarding its qualities for the purpose stated. It will no doubt wear uneven, for its crystaline structure is not uniform, and it will therefore maintain a rough surface, which is a durable quality in preventing horses slipping on the street. On the other hand it does not possess the cohesive strength of the trap rock pavement, therefore it cannot be so durable, and it appears to us that it would soon make our streets obnoxiously dusty.

Artificial Guano.

Some artificial guano was exhibited last week at the Farmers' Club in this city, made from fish, and said to be very good, and will not cost over $10 per tun. Vast quantities of king crabs can be obtained on the coasts of Long Island and New Jersey, which, by drying and reducing to powder in mills, would make as good manure as Peruvian guano.

An omnibus company is about starting at Liverpool, similar to those of London and Paris, to consist of a thousand shares of £10 each.

Scientific American.

NEW-YORK, MAY 10, 1856.

The Woodworth Patent Extension Scheme.

The Senate and House of Massachusetts have, by an unanimous vote, passed resolutions against the further continuation of the great Lumber Planing Monopoly; the Members of Congress from the Old Bay State are likewise officially instructed to use all honorable means in their power to prevent the renewal of the patent.

When we state that the Massachusetts House of Representatives consists of about *four hundred members*, and that the resolutions we speak of were passed without a dissenting vote, it will be understood that the people of that State have a deep feeling upon the subject; they have long endured the oppressive operations of the Monopoly; it rests like an incubus on their mechanical and inventive genius; its greedy grasp is felt in almost every branch of their industry. With one voice, therefore, they protest against its further continuance.

The Chairman of the Committee in the Massachusetts Legislature, to whom the subject of the Woodworth Patent was referred, made a very able report, which we herewith present to our readers. It should receive a careful and deliberate reading.

We also present an interesting letter from the Putman W. Taft, Esq., from whom we received copies of the resolutions. Mr. Taft has long been distinguished for his lively interest in all that promotes the welfare of working people. He is a member of the House, and labored with great zeal to procure the present public expression of the views of that body.

HOUSE OF REPRESENTATIVES,
BOSTON, April 25, 1856.

MESSRS. MUNN & CO.—In your paper of the 22d of March I saw a statement that a resolution had passed the New York Senate with great unanimity remonstrating against the the further extension of the Woodworth Patent. In some of your papers of prior or subsequent date I have also noticed that similar resolutions have passed the Legislatures of Ohio and Louisiana during the past winter. I now have the pleasure of transmitting a copy of a report and resolves upon the same subject, which have been *unanimously* adopted by both branches of the Massachusetts Legislature. I send them to you for publication in the SCIENTIFIC AMERICAN, as being the organ and true exponent of principles best calculated to promote the true interests of the industrial and producing classes in the United States; and while advocating the rights of the inventor to their utmost limits consistent with the constitution, is still the uncompromising foe of Monopoly, especially when that monopoly seeks not only to oppress and paralize the inventive genius of our mechanics by numerous and vexatious law suits, but also enters the political arena with its hundreds of thousands of ill-gotten gain—filched from the earnings of labor by enormous tax—as an electioneering fund to elect Senators and Representatives in Congress who are willing to become its pampered menials; and to bribe, corrupt, and debauch our national Legislature for no other purpose than to perpetuate its own existence. I send them, too, that the mechanics in our sister States may know that the *people* of Massachusetts, without regard to trade, calling, occupation, or profession, are a unit upon this question, and are ready to instruct their Representatives and Senators in Congress to oppose the further extension of that gigantic monopoly. This is not the first time that Massachusetts has spoken upon this subject. In 1852, while a member, I procured the names of all the members of both branches of the Massachusetts Legislature to a remonstrance against the renewal or further extension of the Woodworth Patent, and sent it to Washington. The Committee on Patents, to whom was referred the petition of Wm. Woodworth, speak of that remonstrance as embodying the sentiments of the people of the State, and as being entitled to high consideration. I trust that the resolves which have just been passed, without a dissenting vote, in one of the largest State Legislatures in the United States (amounting as it does to about four hundred members) will be duly appreciated this year by the Congressional committee having the same subject under consideration.

I have in my possession, and shall forward in a few days, a remonstrance signed by nearly a thousand of the mechanics of the city of Worcester, of which number I have the honor of being one. Other similar papers will be sent from Greenfield, and other parts of the State. Very respectfully yours.

PUTMAN W. TAFT.

COMMONWEALTH OF MASSACHUSETTS,
IN SENATE, April 12, 1856.

The Joint Committee on Manufactures, to whom were referred certain resolves relating to Woodworth's Planing Machine, have duly considered the same, and submit the following

REPORT:

Your Committee learn that Woodworth's Planing Machine was first patented in 1828.—The patent was originally issued for fourteen years; it was then extended by the Commissioner of Patents for seven years, and again, by an Act of Congress, seven years longer, making, in all, twenty-eight years. The last extension will expire in December, 1856. Efforts are now making to have it extended fourteen years longer.

The Constitution of the United States provides, that "Congress shall have power to promote the progress of science and useful arts, by securing, for *limited times*, to authors and inventors, the exclusive right to their respective writings and discoveries." This exclusive right can only be conferred for a limited time, not perpetually. The object of this provision is, to allow time to the inventor to mature and test the merits of his invention, and also to give him the exclusive right of manufacturing, vending, and operating the same for a series of years, that he may obtain a reasonable remuneration for the time and expense necessary to perfect the invention. This time has been fixed, by law, to fourteen years, and is sometimes extended to twenty-one years in extraordinary cases. The invention then becomes public property by the condition of the grant—by the terms of the contract between the patentee and the government. The case should be of an extraordinary character in which the rights of the public are divested for a second term, and the duration of a monopoly prolonged by an act of special legislation.

But the case must be still more extraordinary in which Congress is invoked to grant a third extension for a term equal to that of the original patent, thus reaching forward to a second generation, and depriving them of the benefit, not only of the patented machine, but of all subsequent inventions which, by refinement of judicial construction, quickened by the ramifying interests of a profitable monopoly, may be brought within any of the changing phases which ambiguous language may be made to assume, for the purpose of expanding the claim of the patentee.

This patent has already been extended for a term almost unparalleled in the history of the government, and one is almost amazed at the effrontery and pertinacity with which interested parties seek to continue this odious monopoly. The immense profits that have been derived from the use of this patent enables the parties to exert a tremendous power for their own advantage. By a perfect combination of the numerous assignees all over the Union—by making every user of the machine an interested party—by promises of a continuance of the monopoly, and by making each contribute to the general fund—by requiring all those interested to join in memorializing Congress, and in writing letters to the Senators and Representatives—by the employment of the best legal talent in the land—by subsidizing the press, as far as possible, they are able to create what may seem to the Members of Congress to be a public opinion in favor of their petition. It is on this account, and because the public has no ordinary enemy to contend against, that there is an urgent necessity for legislative action.

Twenty-five per cent. of the cost of dressing lumber by these machines is now paid to the holders of the patent right. Thus this patent affords an annual revenue of several millions of dollars, much of which has been, and still continues to be used, to perpetuate its own existence. So long as it shall continue it fixes a direct and heavy tax upon nearly all the machine-dressed lumber in the country. It imposes heavy burdens upon all people, the poor as well as the rich, by compelling them to pay much higher prices for lumber with which to build and repair their shops and dwellings, than would otherwise be required. All who use the machine are required to charge the same prices for work, and thus there can be no competition among them. Should the patent be still further extended there is no prospect of a reduction of rates, for when the last extension was granted there was an immediate rise in the price of work, adding from a dollar to a dollar and fifty cents per thousand feet to the former prices.

The Committee on Patents of the House of Representatives in Congress, in the year 1852, in their report against the extension of the Woodworth Patent, use the following language:—

"The various grants from the government have invested the memorialist with the most profitable monopoly which was ever granted to a citizen. They have imposed upon the public the most onerous burden of taxation for the benefit of a single man, which was ever inflicted upon the country. The profits have been shared by him and his voluntary grantees. The public have borne the burden. They have borne it so long that it may well occasion surprise. But when they are asked to bear it longer, the inquiry naturally arises, when is the burden to cease? Are thirty-one States to be taxed for another term of fourteen years, that one citizen may become rich enough to satisfy not only himself, but all the grantees with whom he chooses to share the national bounty? If the millions already paid are not sufficient to satisfy the claim, how many millions more are demanded? The country is now paying $15,000,000 annually, for work which can be done for $3,000,000. *A profit of one hundred per cent. would seem to be sufficient*, upon an article of indispensable necessity. But even beyond this, there is an excess of $9,000,000 a year, to be paid by the public for fourteen years. And even this furnishes no guarantee that a new extension will not be applied for before the term begins to run. The next Congress may be told, as we are told now, that the extended term has been sold out by the administration for $50,000, and that the debt due to William Woodworth has not yet been paid to his son.

But the debt has been paid. The application is without a shadow of claim, either upon the justice or the bounty of Congress. This patent should no longer stand as a bar to inventive genius; the public should no longer be burdened with its exactions; this department of American industry should no longer be clogged with the revival of an expiring monopoly. The country is one of progress and growth. It is rich in its builders, its mechanics, its artisans; it is rich in its boundless forests, and neither the axe which fells the tree, nor the implements which adapt it to the uses of life, should be made the instruments of needless exactions."

Your Committee, therefore, recommend the passage of the accompanying Preamble and Resolutions.

For the Committee, B. F. WHITE, Chairman.

RESOLVES

RELATIVE TO WOODWORTH'S PLANING MACHINE.

Whereas, We believe the true object of our patent laws to be, protection to the inventor, and not the establishment of a monopoly in the hands of speculators in patents, that may tax the industrial pursuits of the country, without an equivalent; and whereas, we believe the renewal a second time of the patent on Woodworth's Planing Machine, would be a violation of the spirit and design of our patent laws, and fix an unjust and oppressive tax on the mechanical pursuits of the country, therefore

Resolved by the Senate and House of Representatives of the Commonwealth of Massachusetts, That our Senators and Representatives in Congress be requested to use all honorable means in their power, to prevent the renewal of said patent, upon the application of William W. Woodworth, or any person in his behalf.;

Resolved, That the Governor of the Commonwealth be requested to forward copies of the foregoing Preamble and Resolution to our Senators and Representatives in Congress.

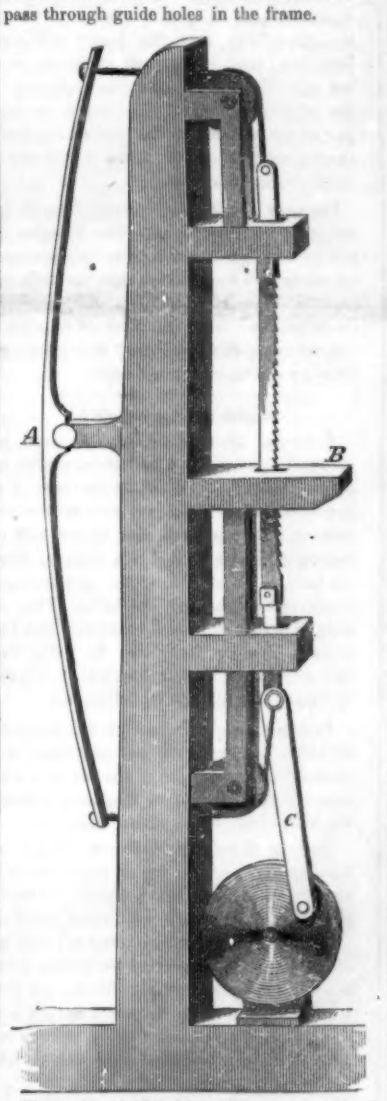
Recent American Patents.

Contrivance for Cleaning Knives—By A. C. Ketchum, (assigned to E. B. Olcutt,) of New York City.—The knives are secured side by side upon a flat board, by means of a clamp, and another board having leather strips, or strips of other suitable elastic material, attached to its under surface, is rubbed back and forth on the knives, and thus they are scoured. This invention is the essence of simplicity.

Improved Electric Printing Telegraph.—By Henry N. Baker, of Union, N. Y.—This telegraph differs from other electro-magnetic printing telegraphs principally in the devices, which are employed for sending and for receiving and printing the communications. The various parts are simpler than the ordinary printing telegraphs. and it is much less expensive.

Improvement in Saw Mills—By T. Sharp, of Albany, N. Y.—This invention consists in straining the saw by means of a single spring placed behind the standard, as shown in the engraving.

A is the spring, pivoted in its center. The ends of the spring are connected, respectively with the ends of the saw, by cords which pass over friction rollers. The heads of the saw pass through guide holes in the frame.



The tension with which the saw is strained depends on the stiffness of the spring, which, of course, can be regulated at pleasure. As the saw moves up and down the spring vibrates back and forth on its pivot, always keeping up the same strain. The stuff to be cut is fed against the saw, at B, in the usual manner. Motion is given to the saw by pitman C.

The inventor states that this improvement entirely does away with the heavy and ex-

pensive gate or saw frame hitherto required in all saw mills, and diminishes by one half the power required to cut lumber, and, consequently, the cost of producing the same. In some other modes of saw straining the tension comes, to a certain extent, upon the pitman, and thus increases the power required to drive the mill, adds danger of breakage, &c. The above invention possesses no such disadvantages. Any desired amount of strain may be put upon the saw without affecting the pitman or increasing the power, for the tension all falls upon the saw itself. The stroke of the saw may also be increased or diminished without affecting the strain.

This improvement is exceedingly simple in construction and operation. It is well adapted to portable saw mills, and permits their manufacture for $30 and upwards, according to size. Address the inventor for further information.

Improvements in Harvesters—By W. H. Hovey, Springfield, Mass.—The cutting teeth in mowers are usually rivetted fast to the sickle bar. When they become broken or damaged it requires time to replace them. It is vexatious, when cutting grass in the middle of a ten acre lot, to have to knock off and drag the machine to a blacksmith's shop.

The object of the present improvement is to afford a simple, quick, but strong means of putting on and taking off the teeth. This is done by means of pins which pass through the sickle bar and the ends of the teeth, A clamp bar or cover rests on the heads of the pins and keeps them in place. Remove the bar, and any of the teeth can be removed, new ones substituted, &c.

Pen and Pencil Case.—By Edward Baptis, of Hoboken, N. J., (assigned to G. S. Clark,) of New York City.—Turn the case in one direction, and a pencil projects; turn it the other way, and the pencil withdraws into the case, and a pen slides out ready for use. These movements are effected by the employment of double tubes or cases placed one within the other, and having screw threads upon them. It forms a very convenient and useful article.

Improved Shingle Machine.—By John B. Evins, of Green Castle, Ind.—The shingles are cut from blocks of wood, previously prepared, by means of a knife which rises and falls in a frame or gate, somewhat like the old-fashioned straw cutters. The improvement consists in a novel application of levers, which impart a drawing cut motion to the knife.

Recent Foreign Inventions.

Dehairing Hides—C. Claus, England, has obtained a patent for a certain liquor for unhairing hides, as a substitute for lime. Carbonate of lime is first fluxed with sulphur in a furnace, and gypsum is also burned at a red heat in contact with coal in a furnace. These are lixivated with hot water, and the liquor employed for dehairing the hides. They are steeped in it in vats, and examined from time to time. Such a liquor may be better than milk of lime for the purpose stated; it is only by experiment this can be determined.

Printing Ink—T. De La Rue, of London, has obtained a patent for an improvement in printers' ink, consisting of the use of a small quantity of the borate of magnesia added to the ink to improve its drying qualities.

Railway Wheels—S. Sudbrook, of London, has obtained a patent for an invention which consists in forming the periphery or outside edge of railway wheels with wood forced and pressed into and between suitable plates and chambers in such a manner as to form a very hard and compact surface, with the end of the wood so placed as to run on the rail; it is the same application of wood to the tread of railway wheels that has been applied to the bearing boxes of shafts.

To Prevent Local Attraction in Compasses—I. Moore, of Glasgow, has obtained a patent for the above named object, in order that the compass may be made to indicate correctly on iron steamers. The needle is enclosed (except at the point of suspension) in pure shellac or resinous composition. It is them imbedded in cork of considerable thickness, which is covered with shellac. In this condition the needle is suspended in the usual way. It is stated that this method of treating the needle prevents local attraction in both ships and surveyors compasses.

Paper from Refuse Tanned Leather—Lazare Ochs, of Belgium, has obtained a patent for making paper from the cuttings, waste leather, and scraps of tanned leather. The manufacture of paper from leather is an old story, as an American patent was obtained for such paper many years since; but M. Ochs' method of treating his leather to take out the tanning is worthy of attention for its simplicity. The scraps of tanned leather are placed in sieves on the ends of arms or spokes on a wheel, and are made to revolve in a stream of water, which operation, when continued long enough, washes out the tannin from the leather. After this about 20 per cent. of old hemp rope is mixed with the scraps, and the whole is cut up and reduced to pulp, from which the paper is made. A very strong coarse wrapping paper is made in this manner.

Improved Toilet Glass—This improvement present the peculiarity of reflecting the back of the head as perfectly as it does the face, on one surface at the same time, thereby enabling a lady to arrange her back hair with the greatest ease and precision. A brass telescopic rod, A, with a circular mirror, B, suspended from it, is attached to the top of an ordinary toilet glass by means of a thumb screw, C, and when the rod is drawn out in the position shown in the drawing, the back of the head is at once reflected in the glass; when not required for use the circular mirror can easily be placed back at the top of the glass out of the way, so as not in the least to interfere with the ordinary use of the glass. This is an ingenious contrivance. Exhibited at the late exhibition of the Society of Arts and Manufactures, London, by Messrs. Heal & Son.

Charcoal in Biscuits—A patent has been obtained by J. Bird, of London, for an application of purified wood charcoal in fine powder mixed with flour for biscuits. It is stated that this is "an agreeable form of using the charcoal medicinally." Charcoal powder is used by dyspeptics, and those troubled with sourness or acid and gases in their stomachs, and the foregoing biscuit is especially provided for such. As starch and fat flesh meat contain a great amount of carbon or charcoal, the biscuit may also be designed to answer the purpose of food.

Experiments with Metals.

In the two preceding numbers of the SCIENTIFIC AMERICAN we have briefly presented some new and useful information derived from the reports of the U. S. Officers of Ordnance, and we will conclude all that we intend to say on the subject in our next.

It will be remembered by many of our readers that on the 28th of February, 1844, while President John Tyler, with a number of the members of his cabinet and other distinguished personages, were on board the steam frigate *Princeton*, a huge wrought-iron cannon, named the "Peacemaker" burst, while firing a salute, killing the accomplished Legare, Upsher, and others. This sad accident, which created great sensation throughout our country, resulted in condemning, at the time, the use of *wrought*-iron as a material for cannon; but no satisfactory cause for the bursting of that gun has been made public until now. Under the direction of Major Wade three bars were cut from the exploded cannon, and submitted to a breaking test. They were each two feet long and nearly two inches deep and broad, and were set on supports twenty inches apart, and the breaking force was applied at the middle. With a weight of 10,800 lbs. applied, the bar was deflected ·35 of an inch, and received a permanent set of ·30 of an inch. The tensible strength of these bars was also tested in comparison with similar bars of "Russia" iron, and English "Low Moor" iron, and "American Bridgewater" hammered iron. The Russian iron yielded with a force of 62,644 lbs. to the square inch; the Low Moor yielded with a force of 56,103 lbs.; the Bridgewater with a force of 53,913 lbs., while the bar from the Peacemaker only stood the strain of 38,495 lbs. The strength of the metal had been impaired by forging as 5 is to 6; but it is very evident that it was very inferior metal. The strength of it ought to have been tested before it was made into a gun; if this had been done a better quality might have been selected, and the unfortunate accident described might not have taken place. Great care should be exercised in the selection of the kind of iron for the particular purpose designed. But how often is this precaution neglected; nay, it is never thought of in too many cases. There is just as much difference in the quality of cast and wrought iron as there is in that of timber—as much difference between the strength of the highest and lowest qualities of iron as between bass-wood and hickory. With regard to the selection of the materials and the necessity of looking to their quality, Major Wade makes some very judicious remarks. He says:—

"What most demands attention at present is the ascertaining and prescribing the conditions to be exacted of the raw material, and of its treatment up to, and exclusive of the casting; for if we do not make sure of obtaining a good quality of iron at the time of its casting into the mold all else is useless, and worse than useless."

Will our engineers and mechanics give heed to these suggestions? The safety of many lives are oftentimes dependent on the strength of a shaft, a beam, or a plate of iron, the quality of which may never have been tested; and yet we are assured, in the work referred to, that different kinds of cast-iron, when submitted to the test of the hydrostatic pump, varied in strength from 1 to 3; that is, one kind of cast-iron possessed three times the strength of another kind; and yet all of these irons had a respectable reputation in the market, and this great difference in their strength never was suspected.

Notes on Ancient and Curious Inventions.—No. 6.

Medicines—The last article—No. 5, page 269—on this subject, concluded with the diaphoric sweating powder of Horton Howard, of Columbia, O., patented August 25, 1832. His other four patents granted at the same time were, 1st, a bitter tonic; 2d, an astringent tonic; 3d, a compound tincture of myrrh, 4th, an anti-spasmodic tincture. All of these patented medicines are as good as the most of the puffed up kind sold at the present day, and the drugs of which they are composed are very generally used. We will describe two of the receipts, as the medicines are good if administered at the right time, and if not, they must be bad.

The Bitter Tonic consists of bark of poplar, 1 lb., root of golden seal, 1 lb., bark of bayberry root, 1 lb., root of American columbo, (Fracera Vertillilata,) 1 lb., cloves and capsicum each 6 oz., and 4 lbs. of good sugar.—These are all pulverized and mixed together and given in water, a teaspoonful to a dose. To render this compound powder laxative, a pound of bitter root (Apocynum Androsaemifolium) and some more cloves, sugar, and capsicum are added. The anti-spasmodic tincture consists of tincture of lobelia seeds, 1 pint, tincture of capsicum, 1 pint, nervine tincture, 3 gills. These are mixed, and half a teaspoonful is given at a dose. It is only used in cases of fits and spasms, and of apparent death from drowning, &c. The tincture of lobelia seeds is prepared by steeping half an ounce of the seeds in a pint of alcohol for ten days; and the tincture of capsicum in the same way, using the same proportions. The nervine tincture is made by taking 4 ounces of ladyslipper, 2 oz. of ginsing, and 2 ounces of nutmeg, and steeping them for ten days in alcohol. It is then strained, and an ounce of anine added to every pint. We do not advise persons to use this medicine.

Cholera Medicine—In October 1832, Jacob Houck, of Baltimore, Md., obtained a patent for a cholera medicine, consisting of gum guac, juniper oil, and rye whiskey in equal parts. A table-spoonful of this mixture in an equal quantity of water was to be taken whenever any premonitory symptoms were felt, and if the first dose was not successful it was to be repeated in half an hour. If the pain was very severe, the dose was to be doubled, and repeated in two hours. After the pain was relieved, fifteen grains of calomel was to be taken, and after this had operated a dose of castor oil was given. This was certainly a cholera medicine; we do not say "preventive or curative."

Another cholera medicine patent was granted to Anthony Hun, Sen., of Lancaster, Ky., on 12th of Aug. 1833—the year of the first visitation of this terrible disease. As soon as the symptoms appeared blisters were to be applied to the pit of the stomach, the crown of the head, on the arms above the wrists, and on the ankles, to draw out the cholera, we suppose. Thirty drops of the following were then to be administered every hour: Paragoric, elixer, and sulphuric ether, in equal parts, and to every dram of this 4 drops each of cajiput and anise seed oil were added. This patent for curing cholera embraces a very afflicting dispensation.

Worm Medicine—J. Oellig, of Pennsylvania, whose patent pill was noticed last week, obtained a patent at the same time with his pill for medicine to destroy worms in the human body. It consisted of an ounce of castor oil 2 drops of oil of tansy, 12 of tincture of foxglove, 10 of the oil of anise seed, 15 of male fern, and 1 scruple of the oil of wormwood seed. A teaspoonful of this medicine was to be given to a child every two hours until it operated. An ounce was a dose for an adult. This medicine appears as if it would effect the object designed, but the dose is too large by one half, at least.

Cancer Ointment—On the 31st of March, 1836, a patent was granted to E. Gilman, of Ohio, for an ointment to cure cancers, composed of finely pulverized sulphate of iron (copperas) made into an ointment with mutton suet. This was spread upon a piece of linen cloth and renewed when necessary—about every ten hours. The cancer was to be washed every time before the ointment was applied with a decoction of spikenard and a little soda dissolved in the water. This, at least, is a safe ointment, if it may not be an effectual one.

Ointment for the Cure of Piles—Wm. W. Riley, of Mansfield, Ohio, obtained a patent for this ointment on January 31, 1844. It is composed of 2 ounces of flour of sulphur, 1 ounce of powdered nut galls, 1 grain of powdered opium, all intimately mixed with lard, until the ointment is of the proper consistency. It is applied to the parts affected twice every 24 hours until a cure results. This ointment has the appearance of being pretty good for the purpose designed.

Great Fire in Philadelphia.

Philadelphia was visited on the 1st of May with one of the most destructive fires that has ever taken place in that city. We regret to state that 44 buildings were destroyed, which, with the merchandize consumed, were valued at $600,000, On this there were $386,000 insurance.

Monster Mortar.

Messrs. Forrester, of Liverpool, Eng., hav recently cast a mortar from Nova Scotia charcoal pig iron. It weighs 14 1-2 tuns; is 7 1-2 feet long, 3 feet 9 inches in diameter, and has a bore of 18 inches.

TO CORRESPONDENTS.

O. M., of Ill.—But one number of Ranlett's Street Architecture has yet been published. As the others issue you will see them noticed in the SCI. AM. The publishers—Dewitt & Davenport—will supply you at 50 cts. per number. The other pamphlet we have ordered to be sent you.

T. H., of N. Y.—Your power gainer is good for nothing. Its principles are not new or patentable. Better turn your attention to another subject.

A. H., of N. Y.—You really have overlooked the main point to which we wished to direct your attention. The perpetual ownership in land purchased or possessed, as guaranteed by civil and common law, is also guaranteed to every inventor with regard to his invention. His ownership is never taken away; it is guaranteed to him forever without a patent. A patent is a delegated power or force to prevent others imitating and using the invention, which is quite different from the grant of ownership in land. We said that the two grants should never be compared together; but still you persist in thus comparing them.

G. N. F., of Pa.—An iron stack for a chimney is very objectionable where one can be built of brick. For a 12-horse power engine we would build a brick chimney no less than forty feet in hight. We do not wish to give advice regarding the use of wet bark as fuel. For every horse-power in a boiler one square foot of furnace bars and nine square feet of heating surface are required. For a 12-horse power boiler you must therefore have 12 square feet of fire grate and one hundred and eight of heating surface. A plain cylinder 12 H. P. boiler with its draft passing direct under it to the chimney at the back end, should be about 20'784 feet long, and 5'464 feet in diameter. About 20 feet long and 3 feet and a quarter in diameter would answer your purpose.

C. W., of M. T.—Your potato digger, as illustrated in your diagram, presents nothing new. In one of the early volumes of the SCI. AM. one was illustrated which presented the same features.

L. L. P., of N. Y.—Minifie's Mechanical Drawing Book would answer your purpose admirably. Price $3. Dewitt & Davenport of this city will furnish it.

M. T., of Del.—The water wheel which you describe is similar to many rotary engines which can be used either for steam or water motors. The only thing new about it appears to be the eccentric toggle-joint valve, which is not claimed new in the patent, but as combined with the buckets. A similar wheel is illustrated on pages 8 and 72, Vol. 4, SCI. AM. It is a water pressure engine and not an overshot wheel as stated by you. Are you not mistaken regarding its advantages?

G. P., of Dich.—Yours on Agricultural Chemistry will appear next week.

D. S. H., of N. Y.—Does the wheel to which you refer operate like Lane's rotoscope, described in our colums.

J. C., of Tenn.—We will endeavor to find a place for yours in our next number.

W. McD., of Pa.—The amount of power required to drive one run of stones is four-horse power; but you may employ ten-horse if you run them at a high velocity

R. S. W., of Mass.—Howd's water wheel is a center vent, rotating in the same direction as the water.

E. J., of N. J.—We understand that the iron to which you refer contains great quantities of zinc; it is soft, but not strong.

S. G. C., of Mich.—A turbine water wheel is one through which the water passes from the center to the circumference, and vice versa. Strictly speaking, it means a wheel which spins on a vertical axis, like a top; but this name is now applied to all wheels the buckets of which are curved, and open from the outside to the inside. Such wheels are now manufactured by various persons in almost every State in the Union. There is no patent in existence covering such wheels exclusively.

G. D. H., of Vt.—You can obtain a pamphlet on the architecture of cast-iron by writing to Mr. Bogardus, Center st., this city.

G. W. C., of Wis.—We do not know what you mean by the term "magnetized mask."

M. J., of Pa.—There is no loss of weight in grinding corn or oats, excepting sometimes a little moisture and dust, not worth estimating. We do not know the cost of transporting a barrel of plumbago from Philadelphia, nor its price per barrel.

H. B. C., of N. Y.—We have never seen the metal silicium, nor are we acquainted with any person who has. We know it has been stated in some papers that it had been freely obtained by M. Deville, of Paris; but these statements want confirmation.

H. R. M., Ohio.—As your State has immense natural resources in an abundance of coal, it will, no doubt, become as great for manufactures as it is now for agriculture; but we would advise you to devote considerable attention to improve the manufacture of iron, and try to reduce its cost.

A. H. F., of Vt.—We have not heard a word about the gold mine of your State for more than a twelve-month.—The speculation, we suppose, met with as little success as it deserved.

A K. H., of Conn.—We cannot inform you where you can obtain the celestial chart with all the fixed stars to the twelfth magnitude.

G. W. R. B., of La.—Wm. Howe has three patents on Truss Bridges: the first was granted July, 1840; the second, August, 1840; and the third, August, 1846. All patents are originally granted for 14 years. The numbers of the papers you order have been again sent.

Z. L., of Ind.—There is no power whatever in the screw itself, whatever may be its pitch or diameter. The power means the force applied to work it; if you can produce a greater effect by the revolution of one screw than by another, is because you apply more force.

O. P. S., of N. Y.—Yours will appear next week.

J. B., of Mo.—Your rotary engine is not new or patentable.

W. L., of Me.—The material of which the ornamental slabs in the British Museum is made, must be prepared paper machie. We have heard of them, but do not know their composition. Paper machie, covered with Blake's fire-proof paint, would make partition walls of the same character.

H. S., of Phila.—All raw silk contains some lime, and this is the reason why it requires much strong soap suds to remove the gum from it before it is fit to be colored.

J. R. T., of Ill.—Lime is an alkali, but remember there is just as much difference between the alkalies as the acids. Lime in water cannot form a soluble soap with oil, like potash or soda; and ammonia cannot form a solid soap at all; it forms a soap liquid, which does not become solid like soda lye soap.

J. Y., of Md.—Buckets such as you describe would possess no advantage. We do not know whether they have been tried. You will find an engraving of a "perpetual motion," water wheel that lifts more water than it consumes, in a recent number of our paper. Read the description and save yourself the trouble of an unsuccessful experiment.

E. T. B., of Md.—The reason why salt is put into lime for whitewashing outhouses and fences, is to preserve it

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Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Saturday, May 3, 1856:—

A. B. H., of Pa., $30; W. B. G., of Iowa, $ . . D., of Ohio, $25; A. B., of Ohio, $30; S. B., of N. . ., $30; G. A. M., of N. Y., $30; G. S. K., of Ohio, $60; W. F. C., of N. Y., $25; J. A. R., of N. Y., $30; L. D. N., of Ohio, $10; J. M. E., of N. Y., $100; J. N. B., of N. J., $25; J. H. Y., of Mo., $10; C. G., of Ohio, $20; C. W. O'L., of S. C., $50; C. Van H., of Mass., $30; O. S., of N. Y., $25; S. W. R., of Mass. $30; W. S., of Mass., $30; W. S. T., of Mass., $55; L. M., of Pa., $30; L. J., of Ct., $25; K. & B., of N. Y., $25; E. A. B., of Mass., $50; B. W. T., of N. Y., $60; A. W. B., of Iowa, $30; O. A. D., of Vt., $30; J C. H., of N. Y., $30; H. A., of Ct., $30; D. & B., of Mich., $55; R. M. D., of Ky., $30; W. M., of Mo., $30; T. & H., of N. J., $150; J. H. B., of N. Y., $200; W. E., Jr., of Ill., $20; J. McC., of Pa., $25; P. D. M. C., of N. Y., $20; J. M F., of Ind., $30; A. C. R., of N. Y., $30; T. B., of Mass., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 3:—

O. T., of Wis.; J. F. T., of S. C.; J. K., of O.; W. B. G., of Iowa; G. W. S., of Pa.; J. A. R., of N. Y.; C. G., of O.; J. N. B., of N. J.; K. & B., of N. Y.; O. S., of N. Y.; W. E., Jr., of Ill.; J. E., of Pa.; W. F. C., of N. Y.; J. McC., of Pa.; T. B., of Mass.; J. C., of N. Y.

Important Items.

BACK NUMBERS VOLUME XI—We are no longer able to supply complete sets of the present volume. The numbers which are entirely exhausted are 6, 12, 14, 15, 17, and 19. Any other numbers up to the present we are able to supply to any who may wish them. Those who order the back numbers from the commencement of the volume will receive such as we have, and their subscription will be entered up enough longer to compensate for the numbers which we are unable to supply

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

Terms of Advertising.

4 lines, for each insertion,	$1
8 " "	$2
12 " "	$3
16 " "	$4

Advertisements exceeding 16 lines cannot be admitted, neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

Science and Art.

Scientific Notes.

To Detect Adulterated Mustard.—At a late meeting of a sanatary committee in London, to inquire into the adulterations of food, Richard Gay said he was superintendent of the mustard department in her Majesty's victualing yard at Deptford, and had been so for 18 months. He had been a master manufacturer for several years. The government established the manufactory on account of the impossibility of obtaining pure mustard. There was a very easy and simple process by which the public might at once detect adulterated mustard. By dropping spirits of ammonia on the mustard, if there was adulteration it would turn red, but if genuine, the color would remain unchanged.

[This test will answer for turmeric, with which English mustard is adulterated, but we do not believe it will answer for yellow corn meal, with which American mustard is commonly mixed. Many of our people purchase English mustard under the mistaken notion that it is better than the American; whereas it is worse.]

Curious Poisoning Accident—A curious event lately occurred in the University of Leipsic Dr. Reclam professor of legal medicine, was lecturing on nicotine; and, to show the deadly effects of the poison, he administered a large dose of it to a big dog. The animal, which was lying on its back, was immediately seized with convulsions, and ejected a considerable portion of the poison with great violence in the professor's face, and some of it entered his mouth. He was at once taken with all the violent symptoms of poisoning, and had not remedies been very promptly administered he would have fallen a victim of forcible poisoning by a dog, in self-defence.

The Platina Coil in Diluted Gas—Dr. Jackson, Liverpool, lately exhibited some interesting experiments with gas. In the first place, he diluted the carburetted hydrogen contained in a receiver with 20 per cent. of atmospheric air, in which state it was not explosive; the gas, in this deteriorated state, when lit at an ordinary burner scarcely rendered "darkness visible," but on the introduction of a slightly coiled platinum wire into the light, the gas expanded into a broad and vivid flame, the fullness and strength of the light greatly exceeding that obtained under like circumstances from the pure gas.

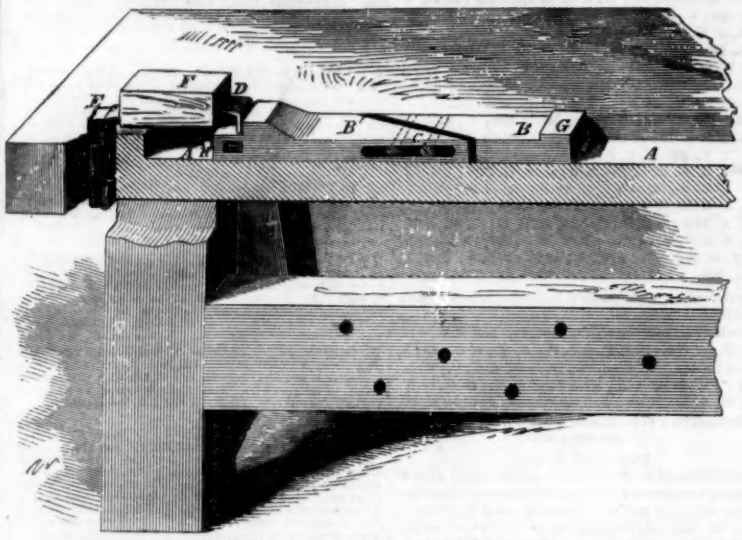
Sir Humphrey Davy was the discoverer of the illuminating properties of platina in a dull flame, but whether it would be economical to use it in a diluted gas flame, or not, we cannot tell. The experiments to decide this can easily be made by any person who wishes to test the matter.

To Detect Strychnine Poison—The *Medical Times and Gazette* says, "The finger of science points to the detection of the murderer by strychnine, and dissipates his visionary hopes; the grain of white powder, which he anticipates will carry his victim silently to the grave, excites, on the contrary, the most violent and characteristic convulsions; a minute fraction of a grain, lying on the animal membranes after death, will exhibit, under appropriate tests, a series of resplendent and iridescent rings of color to the chemist's view; and a portion of fluid from the intestines introduced into the tissues of a living animal will again excite the identical convulsions which followed the first administration of the poison."

A Large Hat Manufactory—The largest establishment in our country, or perhaps the world, for manufacturing gentlemen's hats, is that of Prentice & Co., in the city of Brooklyn. It employs not less than one thousand hands, of whom two hundred are apprentices, picked out of the humbler walks of society, and put in a position where they may make themselves useful and respected. The enormous quantity of four hundred and fifty dozen hats, mostly fur, are daily turned out, ready for immediate sale. To pack them, from 25,000 to 80,000 wooden cases are made annually on the premises, besides 100,000 paper boxes.

Phenomena connected with Vesuvius—A correspondent of the London *Athenæum*, writing recently from Naples, states that Mount Vesuvius, is still in a very agitated state. In the month of February last, this volcano threw out a great quantity of ashes, which, being carried by the north wind in the direction of Bosco Trecase, produced that phenomenon which has of late been so much spoken of as the ejection of fish from the mountain. The true explanation of this is, the ashes falling on the terraces of the houses in the village, destroyed and converted into so manny mummies a great quantity of snails. The report immediately got about that fish had been thrown out. On the 1st of April, ashes of a dark color, and slightly magnetic, fell. They affected the magnetic needle.

IMPROVEMENT IN BENCH HOOKS.



Improved Bench Hook.

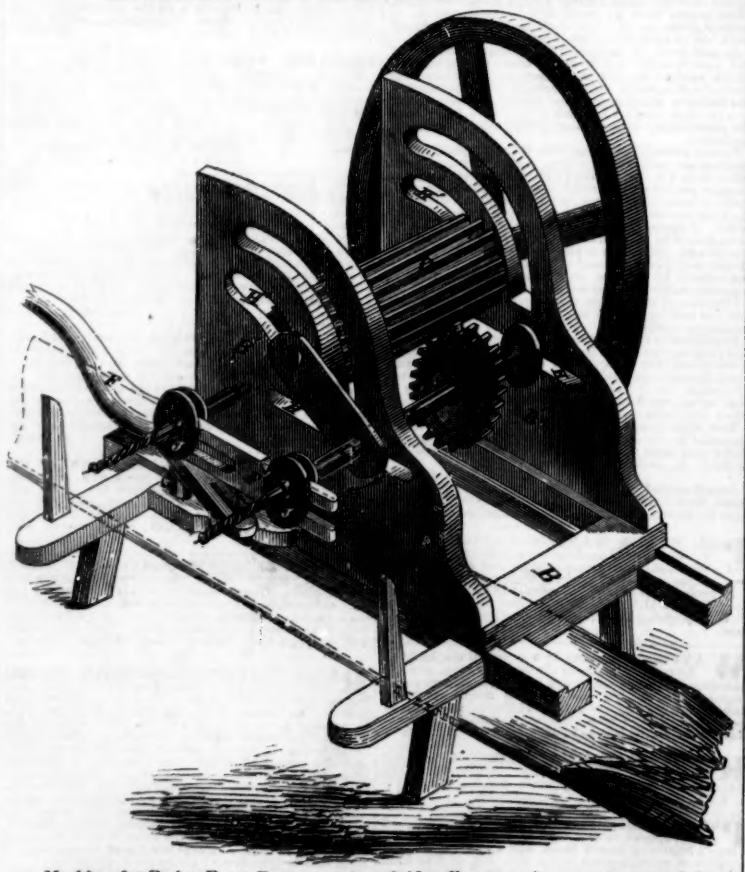
In many species of cabinet and carpenters' work it is necessary to have some good means of securing the stuff upon the bench, so that the tools may be brought to act upon it with accuracy. The improvement herewith illustrated is intended for the purpose named. It consists of a sliding bench hook so arranged as to be self-fastening.

A is a groove in the bench, in which moves a slide made of two parts, B B′, but connected loosely by the screws, C. The forward end of the slide is furnished with a hook, D. E is the common bench hook. The block of wood, F, having been placed against E, the operator pushes the slide piece, B′, so as to bring hook D against F. The separation between B and B′, it will be observed, is angular or wedge shaped, and, as before stated, the two parts are loosely connected by means of screws, C. When the part, B′, is pushed up by the hand of the operator, B is also moved, and its momentum causes it to press close up against B′ and wedge the same tightly in the groove of the bench, thus holding hook, D, firm. The common method is to employ a screw, or some such contrivance to hold the slide. It must be obvious that this improved device, being self-fastening. is much more rapid and convenient for use. The slide is moved back by a slight tap on the projection, G. H is a set screw in the end of B′, for adjusting the hight and holding hook D.

The advantages of this improvement will be readily appreciated by all workers in wood. Mr. Clinton W. Clapp is the inventor. Patented March 11, 1856.

Address Messrs. Clapp and Nuttall, Wappenger's Falls, N. Y., for further information. See advertisement in another column.

MACHINE FOR BORING FENCE POSTS.



Machine for Boring Fence Posts.

The common post and rail fence maintains a decided preference over all other kinds, in the estimation of many farmers It is certainly cheap, since not a nail or screw is required, and, if well put up, is very strong and durable; while for neatness it will compare with almost any species of farm enclosures now employed. The most difficult portion of labor required in their erection is the boring of the posts for the reception of the ends of the rails. The present improvement accomplishes this work with great ease and rapidity.

The apparatus consists of a strong frame, A, on which slides, in ways, a carriage, B, and the pillar blocks, B′; the latter support the cogged main shaft, C. The auger shafts, D D, connect, by means of pinions, E, with the main shaft, C, and thus receive motion.

F is a lever mounted on a pivot, G, and connected at its lower end with the strap, F′; both auger shafts pass through the strap, F′, near which they have bosses, J J, so that when the lever is moved in or out by the attendant, both augers will be also moved; two holes are thus simultaneously cut. The long cogs of the main shaft, C, permit the lateral mavement of the pinions, E, and their shafts, D D′. After two holes have been cut, the attendant slides the carriage, B, along, so as to bring the augers opposite to another part of the post, and bores two new holes.

The pillar blocks, B′, are slotted at H and H′. The auger shaft, D, passes through slot H, and the ends of shaft C, through slot H′. Shaft C is connected with shaft D, by the straps, I. Shaft D may therefore be pushed along horizontally, nearer shaft D′, whenever desired, without interfering with the rotation of the augers, since the two shafts, C and D, will move simultaneously in their respective slots so as to accommodate each other, and thus always preserve their proper distances and connection. The distance between the holes bored may thus be changed, wherever desired, without the least inconvenience and without measuring. Turned by hand, one man does the work of four with common augers; if power is applied much more can be done. All kinds of mortise work may be executed with the apparatus.

This appears to be a very simple, easily managed, and cheap machine. It sells for $16 to $20, leaving a good profit to the maker. Mr. Israel W. Ward, of Birmingham, Pa., is the inventor, and will be happy to give further information. Patented March 18, 1856.